

CLAIMS

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1           1. A stand alone welding power supply comprising;  
2           a primary mover mechanically coupled to a rotating  
3           shaft;

4           a generator having a rotor mechanically coupled to  
5           the shaft, and further having a stator magnetically  
6           coupled to the rotor, whereby the generator provides a  
7           generator output;

8           an inverter having an inverter input in electrical  
9           communication with the generator output, wherein the  
10          inverter inverts power from the inverter input to  
11          provide an inverter output;

12          a controller coupled to the primary mover and  
13          having a feedback input; and

14          a feedback circuit coupled to the welding output  
15          and the feedback input wherein a feedback signal  
16          responsive to at least one welding output operating  
17          parameter is provided to the feedback input.

1           2. The power supply of claim 1 wherein the  
2           primary mover includes a speed control and the controller  
3           includes an output coupled to the speed control, wherein the  
4           speed of the primary mover is controlled in response to the  
5           feedback signal.

1           3. The power supply of claim 2 wherein the speed  
2           control includes an idle/run selector for selecting between  
3           an idle speed and a run speed in response to the feedback  
4           signal.

1           4. The power supply of claim 1 wherein the  
2 controller includes means for controlling at least one of a  
3 throttle position, a fuel pump, an injection timer, a fuel  
4 to air ratio, fuel consumption and ignition timing.

1           5. The power supply of claim 1 wherein the at  
2 least one operating parameter is welding current.

1           6. The power supply of claim 1 wherein the at  
2 least one operating parameter is welding voltage.

1           7. The power supply of claim 5 wherein the at  
2 least one operating parameter further includes welding  
3 voltage.

1           8. The power supply of claim 7 wherein the  
2 feedback circuit includes a multiplier, wherein the  
3 multiplier multiplies signals representative of voltage and  
4 current to obtain a signal representative of power, and  
5 further wherein the feedback circuit includes an integrator  
6 to integrate the signal representative of power.

1           9. The power supply of claim 2 further including  
2 a rectifier that couples the inverter to the ac output, and  
3 wherein the inverter includes at least one input energy  
4 storage device that stores rectified energy and wherein the  
5 controller causes the primary mover to increase speed when  
6 the energy stored decreases past a threshold.

1           10. The power supply of claim 1 wherein the  
2 operating parameter is a function of a ripple in the output.

1           11. The power supply of claim 1 further including  
2 a rectifier coupled to the inverter output to provide a dc  
3 welding output.

1           12. The power supply of claim 1 wherein the  
2           generator is a dc generator.

1           13. The power supply of claim 1 wherein the  
2           generator is an ac ~~dc~~ generator, and the inverter includes an  
3           input rectifier.

1           14. A stand alone welding power supply comprising;  
2           a primary mover mechanically coupled to a rotating  
3           shaft;

4           a generator having a rotor mechanically coupled to  
5           the shaft, and further having a stator magnetically  
6           coupled to the rotor, whereby the generator provides a  
7           generator output;

8           an inverter having an inverter input in electrical  
9           communication with the generator output, wherein the  
10          inverter inverts power from the inverter input to  
11          provide an inverter output;

12          control means, coupled to the primary mover and  
13          having a feedback input, for controlling the primary  
14          mover; and

15          feedback means, coupled to the welding output and  
16          the feedback input, for providing a feedback signal  
17          responsive to at least one welding output operating  
18          parameter to the feedback input.

1           15. The power supply of claim 14 wherein the  
2           primary mover speed control means for controlling the  
3           primary mover's speed, and the control means includes an  
4           output coupled to the speed control means, wherein the speed  
5           of the primary mover is controlled in response to the  
6           feedback signal.

1           16. The power supply of claim 15 wherein the  
2           speed control means includes an idle/run selector means for

3       selecting between an idle speed and a run speed in response  
4       to the feedback signal.

1           17. The power supply of claim 14 wherein the  
2       control means includes means for controlling at least one of  
3       a throttle position, a fuel pump, an injection timer, a fuel  
4       to air ratio, fuel consumption and ignition timing.

1           18. The power supply of claim 14 wherein the at  
2       least one operating parameter is welding current.

1           19. The power supply of claim 14 wherein the at  
2       least one operating parameter is welding voltage.

1           20. The power supply of claim 18 wherein the at  
2       least one operating parameter further includes welding  
3       voltage.

1           21. The power supply of claim 20 wherein the  
2       feedback means includes a multiplier means for multiplying  
3       signals representative of voltage and current to obtain a  
4       signal representative of power, and further wherein the  
5       feedback means includes an integrator means for integrating  
6       the signal representative of power.

1           22. The power supply of claim 15 wherein the  
2       inverter includes at least one input energy storage means  
3       for storing energy to be inverted by the inverter, and  
4       wherein the control means further includes means for  
5       increasing primary mover's speed when the energy stored  
6       decreases past a threshold.

1           23. The power supply of claim 14 wherein the  
2       operating parameter is a function of a ripple in the output.

1           24. The power supply of claim 14 further  
2         including a rectifier means coupled to the inverter output  
3         for providing a dc welding output.

1           25. The power supply of claim 14 wherein the  
2         generator is a dc generator.

1           26. The power supply of claim 14 wherein the  
2         generator is an ac dc generator and the inverter includes a  
3         rectifier.

1           27. A method of providing welding power  
2         comprising;  
3              generating an electrical output with an engine and  
4         generator;  
5              inverting the electrical input to provide an ac  
6         inverter output;  
7              controlling the engine using feedback indicative  
8         of a welding output operating parameter.

1           28. The method of claim 27 wherein the engine  
2         speed is controlled in response to the feedback.

1           29. The method of claim 28 wherein the step of  
2         controlling includes the step of selecting between an idle  
3         speed and a run speed in response to the feedback.

1           30. The method of claim 27 wherein the step of  
2         controlling includes controlling at least one of a throttle  
3         position, a fuel pump, an injection timer, a fuel to air  
4         ratio, fuel consumption and ignition timing.

1           31. The method of claim 28 including the step of  
2         providing feedback responsive to welding current.

1               32. The method of claim 28 including the step of  
2 providing feedback responsive to welding voltage.

1               33. The method of claim 28 including the step of  
2 providing feedback responsive to welding power.

1               34. The method of claim 33 wherein step of  
2 providing feedback further includes the steps of multiplying  
3 signals representative of voltage and current to obtain a  
4 signal representative of power, and integrating the signal  
5 representative of power.

1               35. The method of claim 28 further including the  
2 step of storing energy after rectification and wherein the  
3 step of controlling includes the step of increasing engine  
4 speed when the energy stored decreases past a threshold.

1               36. The method of claim 31 wherein the feedback  
2 is responsive to a ripple in the output.

1               37. The method of claim 31 further including the  
2 step of rectifying the inverter output to provide a dc  
3 welding output.

1               38. The method of claim 27 wherein the step of  
2 generating includes the step of generating a dc output.

1               39. The method of claim 27 wherein the step of  
2 generating includes the step of generating an ac dc output  
3 and the step of inverting includes the step of rectifying..